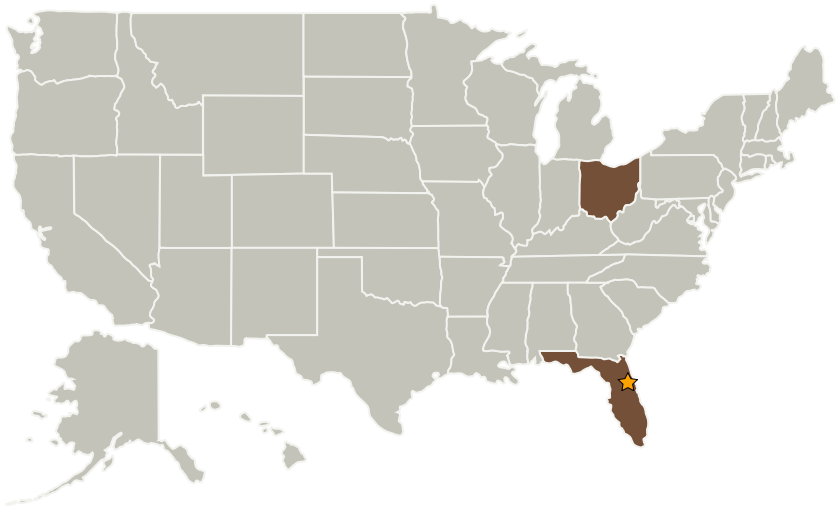
Moisture-resistant TPS Materials, Phase I

Completed Technology Project (2004 - 2004)

Project Introduction

The proposed NASA Phase I SBIR will generate closed-cell foam thermal protection system materials which do not need waterproofing, and which can be applied as a coating to replace impregnation densification processes and which can potentially protect critical structural elements from penetration of hot reentry gases in the event of damage to the external insulation. Specifically, the program will demonstrate preceramic-polymer derived syntactic foams and plasma sprayed syntactic foam coatings which can survive exposures to 2500 F erosive gases while being waterproof and able to withstand high pressure water-jet cleaning processes. The proposed foams and low density TBC?s could replace a portion of the foam insulation on the SRB and external tank, as well as providing a backup TBC to protect space transportation system structures in the event of localized insulation failure.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
★Kennedy Space Center(KSC)	Lead Organization	NASA Center	Kennedy Space Center, Florida
Powdermet, Inc.	Supporting Organization	Industry	Euclid, Ohio

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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Kennedy Space Center (KSC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Primary U.S. Work Locations	
Florida	Ohio

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

Andrew J Sherman

Technology Areas

Primary:

- TX14 Thermal Management Systems
  - TX14.2 Thermal Control Components and Systems
    - TX14.2.4 Insulation and Interfaces